

Foodborne Illness Investigation and Control Reference Manual

**MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH
Division of Epidemiology and Immunization
Food Protection Program
Division of Diagnostic Laboratories**

Foodborne Illness Investigation and Control Reference Manual

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Preface

Purpose Of The Manual

The Massachusetts Department of Public Health (MDPH) is placing increased emphasis on foodborne illness investigation, control and prevention. This emphasis is based on the following:

- the MDPH's Working Group on Foodborne Illness Control (WGFIC),
- local board of health members and health department staff in Massachusetts who have come together at focus groups and meetings coordinated by the Division of Epidemiology and Immunization and the Food Protection Program, and
- the CDC's 1994 publication, *Addressing Emerging Infectious Disease Threats: A Prevention Strategy for the United States*.

These sources point out the need for up-to-date information and increased technical assistance to the local health departments for prevention and control of infectious diseases, including foodborne illness.

This reference manual is part of the MDPH's focus on providing more trainings and technical assistance for local boards of health and health department staff. The purpose of the manual is to guide local boards of health and health department staff through foodborne illness investigation and control. It is designed as a comprehensive reference covering both epidemiologic and environmental aspects of a foodborne illness investigation, and emphasizes the practical and necessary features of investigation and control. Contained within the manual are basic information, guidelines, recommendations and regulatory requirements. While this manual is targeted to board of health members and health department staff, other health professionals can also use the information to facilitate understanding of how local boards of health and health department staff operate, and how they themselves play a role in foodborne illness investigation and control.

The MDPH's Working Group on Foodborne Illness Control

The development of this manual has been made possible by the CDC, National Center for Infectious Diseases and the Massachusetts Department of Public Health's Working Group on Foodborne Illness Control (WGFIC). This working group is comprised of members of three divisions involved in the investigation of foodborne illness, each in a separate bureau in the Department of Public Health. They are:

- The Food Protection Program (Center for Environmental Health),
- the Division of Epidemiology and Immunization (Bureau of Communicable Disease Control), and
- the Division of Diagnostic Laboratories (Bureau of Laboratory and Environmental Sciences).

The Working Group's main functions are:

- to respond to consumer complaints regarding foodborne illness,

- to assist and/or train local boards of health in investigations of foodborne illness or outbreaks,
- to identify causes of outbreaks (through environmental inspections, lab analysis and epidemiologic analysis),
- to track cases and complaints linked to the consumption of food, and
- to make recommendations and take necessary steps for the prevention and control of foodborne illness.

Team Approach

Investigation of an outbreak of foodborne illness is a team effort in which each member plays an essential role. The collaborative nature of the Working Group has contributed to improved communication between the Divisions and a better understanding of what is going on throughout the state. Collaboration and closer working relationships for those board of health members and health department staff who address foodborne illness will be emphasized throughout the manual. Increased understanding of others' responsibilities and even cross-training can result in improved local foodborne illness investigation and control programs. It is also important to note that the WGFIC is available to offer guidance and assistance as needed.

Organization Of The Manual

Chapters 1-3 intend to give the reader appropriate background information on foodborne illness.

Chapter 1 presents an overview of the history and trends of foodborne illness, both for the nation and Massachusetts.

Chapter 2 discusses how foodborne disease is classified and contains descriptions of causative agents and associated illnesses. The focus of the manual is on illness caused by three common microbial food hazards: viruses, bacteria and parasites. Other less common etiologic agents such as molds and chemicals are referred to but not specifically addressed.

Chapter 3 provides an overview of the pathogenesis of foodborne illness.

Chapters 4-8 cover the sequential events of investigations.

Chapter 4 explains the concepts of disease surveillance, describes the methods by which foodborne illness data are collected and used, and addresses various data collection issues, including confidentiality.

Chapter 5 addresses how staff should proceed when addressing foodborne illness complaints.

Chapter 6 presents steps in an epidemiologic investigation.

Chapter 7 presents steps in an environmental investigation.

Chapter 8 covers documenting complaints, writing outbreak reports, recommended strategies for control and using data for prevention.

<p>NOTE: While Chapters 4-8 are organized in a particular order, an investigation does not necessarily have to be carried out in this order. Several steps may be put into action simultaneously; thus please note the references to other chapters and sections as you read along.</p>
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References are listed at the end of each chapter and serve to direct readers to noteworthy publications, both basic and specialized, that further explore the subject of each chapter. The appendices contain additional supplemental information and are referred to within the chapters. The list of acronyms and the glossary may be a useful adjunct to the text.

PLEASE NOTE THE FOLLOWING:

- 1) This manual is designed to give an overview of foodborne illness investigation and control. As experience has proved, outbreaks can vary greatly from setting to setting, and it is impossible to address all the questions and situations that may come up. Again, The Working Group on Foodborne Illness Control is available to offer guidance and assistance as needed. (Telephone numbers are listed on page xiii.
- 2) This reference manual is focused on retail food and food service establishment settings. This includes restaurants, supermarkets, institutional food service operations, catered affairs, temporary food establishments and kitchens in bed and breakfast establishments. Other settings, such as private homes, will be addressed as needed.
- 3) The terms “foodborne illness” and “foodborne disease” are used interchangeably throughout this manual.
- 4) The terms “food handler” and “food worker” are used interchangeably throughout this manual.
- 5) “You” and “your” refers to the people/audience for which this manual is intended, namely, board of health members and health department staff.
- 6) All information in this manual must be considered in light of newer information available after publication. The three-ring binder format of this manual allows for additional and updated material as available.

List of Acronyms

Aw	Water Activity
AIDS	Acquired Immune Deficiency Syndrome
AR	Attack Rate
ASTHO	Association of State and Territorial Health Officials
BOH or LBOH	Local Board of Health
CD	Communicable Disease
CDC	U.S. Centers for Disease Control and Prevention
CMR	Code of Massachusetts Regulations
CCP	Critical Control Point
CSTE	Council of State and Territorial Epidemiologists
DDL	Division of Diagnostic Laboratories
EHEC	Enterohemorrhagic <i>Escherichia coli</i>
FDA	U.S. Food and Drug Administration
FPP	Food Protection Program
GI	Gastrointestinal
HACCP	Hazard Analysis Critical Control Point
HAV	Hepatitis A Virus
HRA	HACCP Risk Assessment
HUS	Hemolytic Uremic Syndrome
IG	Immune Globulin
I&Q	Isolation and Quarantine
MDPH	Massachusetts Department of Public Health
MGL	Massachusetts General Law
MMWR	Morbidity and Mortality Weekly Report
O&P	Ova and Parasites
PIC	Person-in-Charge
PHF	Potentially Hazardous Food
PSP	Paralytic shellfish poisoning
SE	<i>Salmonella enteritidis</i>
SLI	State Laboratory Institute
USDA	U.S. Department of Agriculture
VNA	Visiting Nurse Association
WGFIC	Massachusetts Working Group on Foodborne Illness Control

Important Reference Materials - How To Obtain Them

There are numerous references to two Massachusetts regulations throughout this reference manual. Information on how to obtain a copy of each is listed below.

- **Regulation 105 CMR 300: Reportable Diseases and Isolation and Quarantine Requirements (July 1994):** A free copy can be obtained by calling the MDPH, Division of Epidemiology and Immunization at (617) 983-6800.
- **Regulation 105 CMR 590: Minimum Sanitation Standards For Food Service Establishments - Article X (April 1994):** A copy can be bought from the State House Book Store or ordered by mail. The address is: State House Book Store, State House, Room 116, Boston, MA 02133. For more information call the State House Book Store at (617) 727-2834.

The **Reference Manual for Food Protection Programs**, published and sold by the Massachusetts Health Officers Association (MHOA), contains detailed food protection information specific to Massachusetts and can be used as a supplement.

For information on ordering, contact the MHOA:

MHOA
PO Box 849
Sherborn, MA 01770
(508) 653-8203

Important Telephone Numbers

Massachusetts Department of Public Health - Working Group on Foodborne Illness Control

Division of Epidemiology and Immunization (617) 983-6800

Contact for technical assistance with the epidemiologic investigation such as obtaining medical histories, coordinating stool specimen submissions and developing questionnaires. On-site investigation assistance is often available for larger outbreaks. The Division maintains a 7day/week, 24 hour epidemiologist on-call for emergencies (e.g., outbreak assistance). The emergency telephone number for nights and weekends is **(617) 522-3700**.

Food Protection Program (617) 983-6712

Contact for policy and technical assistance with the environmental investigation such as conducting a HACCP risk assessment, initiating enforcement actions and collecting food samples. On-site investigation assistance is often available for larger outbreaks.

Division of Diagnostic Laboratories (617) 983-6600

Contact for technical assistance with the collection protocol for food and clinical specimens and interpretation of laboratory results.

Summary - Sequential Steps in the Investigation of Foodborne Illness Complaints and Outbreaks

Steps	reference
1) Be prepared. Designate responsible individual(s) trained in foodborne disease prevention and control to evaluate and investigate foodborne illness complaints and outbreaks.	Chapter 5
2) Maintain a foodborne illness surveillance system. This is necessary to determine any changes in the frequency or distribution of cases and permits early identification of outbreaks or potential outbreaks of foodborne illness.	Chapter 4
3) Record complaints on a <i>Foodborne Illness Complaint Worksheet</i> . Log all reports in a logbook or electronic data system. Send worksheets to the MA Food Protection Program. (Immediately refer complaints of food prepared or manufactured in another jurisdiction to the appropriate LBOH.)	Chapter 4
4) Decide whether to investigate. Is the complaint valid?	Chapter 5
5) Report all clusters or outbreaks to the Massachusetts Food Protection Program (617-983-6712) or the Division of Epidemiology and Immunization (617-983-6800).	Chapter 5
6) Take steps to verify diagnosis. <ul style="list-style-type: none"> • Collect leftover food samples when appropriate from the food establishment and/or complainant in a timely manner. • Obtain clinical samples when appropriate in a timely manner. • Obtain case histories. • Immediately investigate reports of suspect sick food workers and exclude if necessary. Request all symptomatic food workers to submit stool specimens. Stool samples should be submitted within 48 hours of your request. In an outbreak situation, request ALL food workers to submit stool specimens, especially when an implicated food is not apparent. Food workers who do not submit stool specimens must be restricted from work until they comply. 	Appendix B Chapter 6 Chapter 6 Chapter 6 and Appendix A
7) Conduct an environmental investigation within 24 hours. Conduct a Hazard Analysis Critical Control Point (HACCP) risk assessment of the implicated foods as part of your investigation.	Chapter 7
8) Develop a case definition and identify cases. Make epidemiological associations (TIME, PLACE, PERSON). Formulate hypotheses.	Chapter 6
9) If necessary, initiate immediate correction or enforcement actions (embargo, disposal, emergency closure, suspension of operations). Coordinate food recalls and tracebacks with industry and other local, state and federal regulatory agencies. If necessary, issue a press release or public notice.	Chapter 7
10) Expand investigation. Find and interview additional cases and persons at risk. Collect data, make calculations, analyze data. Test hypotheses. Take control action.	Chapter 6
11) Complete and submit <i>case report forms</i> (on reportable diseases) to MDPH.	Chapter 4
12) Document all LBOH actions. Submit all reports of your investigation including a copy of the last routine food inspection report for the implicated establishment to the Food Protection Program.	Chapter 8

